

REMARKS

I. Status of the Claims:

Claims 1-3 were pending in the application prior to this amendment. All of the pending claims 1-3 were rejected by the Examiner in the present Office Action.

By this Amendment, independent claims 1-2 have been amended. Claim 5 has been added and is now presented for consideration by the Examiner. No new matter has been introduced, and thus, entry and consideration of this amendment is now respectfully requested.

II. Response to 35 U.S.C. §102(b) claim rejections:

Claims 1 and 2 stand rejected under 35 U.S.C. §102(b) as being anticipated by Sasakura (U.S. 5,995,144, hereafter "Sasakura"). More specifically, the Examiner alleges that the Sasakura reference anticipates each and every limitation of independent claims 1-2.

Sasakura is an automatic focus system for an image capture device (camera). The Examiner relies mainly upon the background of the invention in Sasakura, including at least FIG. 1-4 and columns 1-3, when rejecting the present invention. This discussion of the art centers on auto-focus methods in film-type cameras, wherein a light incident from lens 1 passed through a half-mirror 2 and is reflected downward from sub-mirror 3 (FIG. 1). A secondary imaging lens 6 then breaks the light into two beams which fall incident on two line sensors 7A and 7B (FIG. 2) composed of a predetermined number of pixel photoelectric conversion elements. These line sensors measure light intensity along the length of the sensor, and determine if the maximum intensity of both sensors correlate to a predetermined "focus" distribution. If, for example, both intensities fall inside this range, then the lens is near-focused (FIG. 2). If the intensities fall outside of the predetermined focus distribution, then the lens is determined to be far-focused.

Applicants continue to assert that the Sasakura reference is distinguishable from the present invention, as claimed, because the "correlation" in Sasakura is based on a distribution of voltages generated in two linear arrays of pixel photoelectric conversion elements. This method is not analogous to determining the focus correlation based on the computed ratio of the claimed invention. However, in order to expedite prosecution, Applicants respectfully request reconsideration of the pending application in view of claim amendments now presented herein.

The amendments to independent claims 1 and 2 are directed to shading correction and clarifying the focus detection ratio. The present invention, in at least one embodiment, performs shading correction before calculating a focus correction amount (for example, see FIG. 16 and page 16, line 20-page 17, line 26 of the specification). The shading correction may make the luminance of the image signals projected on the focus detection areas uniform for all pixels.

On the contrary, Sasakura utilizes an uncorrected image signal as an input to the focus detection system. FIG. 5 discloses a schematic view of the Sasakura image capture device. The incoming image proceeds directly through optical elements 1, 2, 3, 15, 6 and 7 to system controlling part 14 that controls lens driving device 16. No shading correction is applied to the sensed image information as a part of this process. While a signal processing circuit is shown in this figure at 11, the signal processing circuit is described only as outputting a video signal conforming to a predetermined system (e.g., page 4, lines 25-38), and therefore, does not appear to be directed to shading correction. Regardless, even if the disclosed signal processing circuit 11 did provide shading correction, the output of this circuit is utilized only for adjusting image information that will be recorded, not as a part of the focus detection process.

Further, the meaning of the word “shift” in the present invention, as claimed, is entirely different from the meaning of the word “shift” in Sasakura. “Shift” in Sasakura means that an image is mathematically shifted by pixel unit when a correlation between image A and image B is calculated. On the contrary, in the present invention, the word “shift” indicates a distance between the focus detection area and the optical axis. The present invention is based on the possibility that the shapes of image A and image B may change as the exit window changes. Therefore, a ratio between the shift amount and the width of the focus detection opening pupil is calculated. As a result, the present invention, as claimed, is distinguishable from Sasakura.

In view of the above, Applicants contend that independent claims 1 and 2, as amended, are distinguishable from Sasakura, and respectfully request that the 35 U.S.C. §102(b) rejection to claims 1 and 2 now be withdrawn.

III. Response to 35 U.S.C. §103 claim rejection:

Claim 3 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Sasakura in further view of Sasakura. More specifically, the Examiner alleges that dependent claim 3 is obvious in view of the teachings of the Sasakura reference.

Claim 3 depends from claim 2, and therefore, is distinguishable from Sasakura for at least the amendments and remarks set forth above with respect to the 35 U.S.C. §102 rejection.

In view of the above, Applicants respectfully request that the 35 U.S.C. §103(a) rejection to claim 3 now be withdrawn.

IV. New Claims:

New claim 5 is now presented for consideration. Aside from depending from an independent claim 1 that was previously asserted to be distinguishable from Sasakura, in performing shading correction in the present invention, the CPU of the image processing device may use lens information to determine an intensity ratio between the A and B signals (FIG. 17-18 and page 17, lines 1-9), which is neither recited nor implied by the Sasakura reference.

CONCLUSION

Based on the foregoing amendments and remarks, Applicants respectfully request reconsideration and withdrawal of the rejection of claims and allowance of this application.

AUTHORIZATION

The Commissioner is hereby authorized to charge any additional fees which may be required for consideration of this Amendment to Deposit Account No. 13-4500, Order No. 1232-5227.

In the event that an extension of time is required, or which may be required in addition to that requested in a petition for an extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to Deposit Account No 13-4500, Order No. 1232-5227.

Respectfully submitted,
MORGAN & FINNEGAN, L.L.P.

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By: 

Elliot L. Frank
Registration No. 56,641

Correspondence Address:

Address Associated With Customer Number:
27123

(202) 857-7887 Telephone

(202) 857-7929 Facsimile